Journal of Applied Ecology

Volume 36
1999

EDITORS
M. W. Pienkowski, A. R. Watkinson & S. J. Ormerod

MANAGING EDITOR
G. Kerby

EDITORIAL REVIEW BOARD:

N. D. Barlow
J. M. Bullock
C. R. Dickman
L. G. Firbank
R. P. Freckleton
R. E. Green
A. J. Hester
M. O. Hill
G. R. Iason
W. M. Lonsdale
D. I. McCracken
P. Rothery
J. Treweek
L. G. Underhill
N. R. Webb

Published for the British Ecological Society by
Blackwell Science Ltd
OXFORD LONDON EDINBURGH BOSTON
MELBOURNE BERLIN TOKYO

This journal is covered by *CABS, Chemical Abstracts, Current Contents, ASCA, Geo Abstracts, GEOBASE* and *Science Citation Index*

© 1999 British Ecological Society. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The British Ecological Society for libraries and other users registered with the Copyright Clearance Centre (CCC) Transactional Reporting Service, provided that the base fee of $15.00 per copy is paid directly to CCC, 222 Rosewood Drive, Suite 910, Danvers, MA 01923, USA. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale.

Typeset by Polestar Digital Data Ltd, Glasgow.
Printed in Great Britain by the Alden Group, Oxford.

Contents

Volume 36 Number 1 1999

Sixth BES Lecture

1 R. WATSON.
Common themes for ecologists in global issues

Standard Papers

11 P. DUNCAN, A. J. M. HEWISON, S. HOUTE, R. ROSOUX, T. TOURNEBIZE, F. DUBS, F. BUREL & V. BRETAGNOLLE.
Long-term changes in agricultural practices and wildfowling in an internationally important wetland, and their effects on the guild of wintering ducks

24 A. B. HALD.
The impact of changing the season in which cereals are sown on the diversity of the weed flora in rotational fields in Denmark

33 D. PAINTER.
Macroinvertebrate distributions and the conservation value of aquatic Coleoptera, Mollusca and Odonata in the ditches of traditionally managed and grazing fen at Wicken Fen, UK

49 J. J. BEUKEMA & G. C. CADÉE.
An estimate of the sustainable rate of shell extraction from the Dutch Wadden Sea

59 M. C. GRANT, C. ORSMAN, J. EASTON, C. LODGE, M. SMITH, G. THOMPSON, S. RODWELL & N. MOORE.
Breeding success and causes of breeding failure of curlew *Numenius arquata* in Northern Ireland

75 S. BEARHOP, D. R. THOMPSON, S. WALDRON, I. C. RUSSELL, G. ALEXANDER & R. W. FURNESS.
Stable isotopes indicate the extent of freshwater feeding by cormorants *Phalacrocorax carbo* shot at inland fisheries in England

85 C. R. VOLCHANSKY, J. H. HOFFMANN & H. G. ZIMMERMANN.
Host-plant affinities of two biotypes of *Dactylopius opuntiae* (Homoptera: Dactylopiidae): enhanced prospects for biological control of *Opuntia stricta* (Cactaceae) in South Africa

92 J. BUTTERFIELD.
Changes in decomposition rates and Collembola densities during the forestry cycle in conifer plantations

101 J. P. ROBIN & V. DENIS.
Squid stock fluctuations and water temperature: temporal analysis of English Channel Loliginidae

111 O. TENOW, A. C. NILSSEN, B. HOLMGREN & F. ELVERUM.
An insect (*Argyresthia retinella*, Lep., Yponomeutidae) outbreak in northern birch forests, released by climatic changes?

123 N. JORDAN, M. KELRICK, J. BROOKS & W. KINERK.
Biorational management tactics to select against triazine-resistant *Amaranthus hybridus*: a field trial

133 A. J. HESTER, I. J. GORDON, G. J. BAILLIE & E. TAPPIN.
Foraging behaviour of sheep and red deer within natural heather/grass mosaics

147 A. N. HOODLESS, R. A. H. DRAYCOTT, M. N. LUDIMAN & P. A. ROBERTSON.
Effects of supplementary feeding on territoriality, breeding success and survival of pheasants

157 C. D. HARGIS, J. A BISSONETTE & D. L. TURNER.
The influence of forest fragmentation and landscape pattern on American martens

173 D. J. SPURGEON & S. P. HOPKIN.
Seasonal variation in the abundance, biomass and biodiversity of earthworms in soils contaminated with metal emissions from a primary smelting works

184 Book Reviews
188 Instructions for Contributors

Volume 36 Number 2 1999

Standard Papers

191 K. J. GASTON, T. M. BLACKBURN & R. D. GREGORY.
Does variation in census area confound density comparisons?

205 T. M. CARO.
Densities of mammals in partially protected areas: the Katavi ecosystem of western Tanzania

218 R. A. PHILLIPS, D. R. THOMPSON & K. C. HAMER.
The impact of great skua predation on seabird populations at St Kilda: a bioenergetics model

233 F. EKELUND.
The impact of the fungicide fenpropimorph (Corbel®) on bacterivorous and fungivorous protozoa in soil

244 A. FIERRO, D. A. ANGERS & C. J. BEAUCHAMP.
Restoration of ecosystem function in an abandoned sandpit: plant and soil responses to paper de-inking sludge

254 J. A. SÁNCHEZ-ZAPATA & J. F. CALVO.
Raptor distribution in relation to landscape composition in semi-arid Mediterranean habitats

263 E. HAUGLAND & R . J. FROUD-WILLIAMS.
Improving grasslands: the influence of soil moisture and nitrogen fertilization on the establishment of seedlings

271 A. M. BARKER, N. J. BROWN & C. J. M. REYNOLDS.
Do host-plant requirements and mortality from soil cultivation determine the distribution of graminivorous sawflies on farmland?

283 H. V. MCKAY, P. J. PROSSER, A. D. M. HART, S. D. LANGTON, A. JONES, C. MCCOY, S. A. CHANDLER-MORRIS & J. A. PASCUAL.
Do wood-pigeons avoid pesticide-treated cereal seed?

297 I. SENINA, Y. TYUTYUNOV & R. ARDITI.
Extinction risk assessment and optimal harvesting of anchovy and sprat in the Azov Sea

307 J. WALLINGA, J. GRASMAN, R. M. W. GROENEVELD, M. J. KROPFF & L. A. P. LOTZ.
Prediction of weed density: the increase of error with prediction interval, and the use of long-term prediction for weed management

317 F. SPITZ & S. LEK.
Environmental impact prediction using neural network modelling. An example in wildlife damage

Volume 36 Number 3 1999

Standard Papers

327 T. P. SULLIVAN, R. A. LAUTENSCHLAGER & R. G. WAGNER.
Clearcutting and burning of northern spruce-fir forests: implications for small mammal communities

345 J. L. READ.
A strategy for minimizing waterfowl deaths on toxic waterbodies

351 D. M. FORSYTH.
Long-term harvesting and male migration in a New Zealand population of Himalayan tahr *Hemitragus jemlahicus*

363 W. WETTSTEIN & B. SCHMID.
Conservation of arthropod diversity in montane wetlands: effect of altitude, habitat quality and habitat fragmentation on butterflies and grasshoppers

374 N. B. PEET, A. R. WATKINSON, D. J. BELL & U. R. SHARMA.
The conservation management of *Imperata cylindrica* grassland in Nepal with fire and cutting: an experimental approach

388 H. NAGENDRA & M. GADGIL.
Satellite imagery as a tool for monitoring species diversity: an assessment

398 J. J. BURDON, A. H. GIBSON, S. D. SEARLE, M. J. WOODS & J. BROCKWELL.
Variation in the effectiveness of symbiotic associations between native rhizobia and temperate Australian *Acacia*: within-species interactions

409 M. MAURITZEN, P. J. M. BERGERS, H. P. ANDREASSEN, H. BUSSINK & R. BARENDSE.
Root vole movement patterns: do ditches function as habitat corridors?

422 J. I. O. ABBOT & K. HOMEWOOD.
A history of change: causes of *miombo* woodland decline in a protected area in Malawi

434 G. R. EDWARDS, M. J. CRAWLEY & M. S. HEARD.
Factors influencing molehill distribution in grassland: implications for controlling the damage caused by molehills

443 E. J. P. MARSHALL & P. BRAIN.
The horizontal movement of seeds in arable soil by different soil cultivation methods

Volume 36 Number 4 1999

Standard Papers

455 G. LINTELL SMITH, R. P. FRECKLETON, L. G. FIRBANK & A. R. WATKINSON.
The population dynamics of *Anisantha sterilis* in winter wheat: comparative demography and the role of management

472 R. E. GREEN & B. ETHERIDGE.
Breeding success of the hen harrier *Circus cyaneus* in relation to the distribution of grouse moors and the red fox *Vulpes vulpes*

484 P. R. BROWN & G. R. SINGLETON.
Rate of increase as a function of rainfall for house mouse *Mus domesticus* populations in a cereal-growing region in southern Australia

494 R. WOODROFFE, S. D. W. FROST & R. S. CLIFTON-HADLEY.
Attempts to control tuberculosis in cattle by removing infected badgers: constraints imposed by live test sensitivity

502 G. L. W. PERRY, A. D. SPARROW & I. F. OWENS.
A GIS-supported model for the simulation of the spatial structure of wildland fire, Cass Basin, New Zealand

519 J. L. OSBORNE, S. J. CLARK, R. J. MORRIS, I. H. WILLIAMS, J. R. RILEY, A. D. SMITH, D. R. REYNOLDS & A. S. EDWARDS.
A landscape-scale study of bumble bee foraging range and constancy, using harmonic radar

534 S. HARDERSEN, S. D. WRATTEN & C. M. FRAMPTON.
Does carbaryl increase fluctuating asymmetry in damselflies under field conditions? A mesocosm experiment with *Xanthocnemis zealandica* (Odonata: Zygoptera)

544 C. D. STYLINSKI & E. B. ALLEN.
Lack of native species recovery following severe exotic disturbance in southern Californian shrublands

555 J. E. FOLEY, P. FOLEY & N. C. PEDERSEN.
The persistence of a SIS disease in a metapopulation

564 J. K. HILL.
Butterfly spatial distribution and habitat requirements in a tropical forest: impacts of selective logging

573 B. J. MCCONNELL, M. A. FEDAK, P. LOVELL & P. S. HAMMOND.
Movements and foraging areas of grey seals in the North Sea

591 I. EVERSON, G. PARKES, K.-H. KOCK & I. L. BOYD.
Variation in standing stock of the mackerel icefish *Champsocephalus gunnari* at South Georgia

Advances in Applied Ecological Techniques

604 NARISU, J. A. LOCKWOOD & S. P. SCHELL.
A novel mark–recapture technique and its application to monitoring the direction and distance of local movements of rangeland grasshoppers (Orthoptera: Acrididae) in the context of pest management

618 Book Reviews

Volume 36 Number 5 1999

Standard Papers

625 J. HOLT, J. COLVIN & V. MUNIYAPPA.
Identifying control strategies for tomato leaf curl virus disease using an epidemiological model

634 V.-M. KOMULAINEN, E.-S. TUITTILA, H. VASANDER & J. LAINE.
Restoration of drained peatlands in southern Finland: initial effects on vegetation change and CO_2 balance

649 A. RODRÍGUEZ & H. ANDRÉN.
A comparison of Eurasian red squirrel distribution in different fragmented landscapes

663 A. C. GRUNDY, A. MEAD & S. BURSTON.
Modelling the effect of cultivation on seed movement with application to the prediction of weed seedling emergence

679 R. A. MCDONALD & S. HARRIS.
The use of trapping records to monitor populations of stoats *Mustela erminea* and weasels *M. nivalis*: the importance of trapping effort

689 R. E. HOARE.
Determinants of human–elephant conflict in a land-use mosaic

701 P. FERRERAS & D. W. MACDONALD.
The impact of American mink *Mustela vison* on water birds in the upper Thames

709 J. HONE.
On rate of increase (r): patterns of variation in Australian mammals and the implications for wildlife management

719 F. M. CHAMBERS, D. MAUQUOY & P. A TODD.
Recent rise to dominance of *Molinia caerulea* in environmentally sensitive areas: new perspectives from palaeoecological data

734 S. MANEL, J. M. DIAS, S. T. BUCKTON & S. J. ORMEROD.
Alternative methods for predicting species distribution: an illustration with Himalayan river birds

748 C. K. PHILCOX, A. L. GROGAN & D. W. MACDONALD.
Patterns of otter *Lutra lutra* road mortality in Britain

763 M. KYTÖ, P. NIEMELÄ, E. ANNILA & M. VARAMA.
Effects of forest fertilization on the radial growth and resin exudation of insect-defoliated Scots pines

770 R. J. MITCHELL, R. H. MARRS, M. G. LE DUC & M. H. D. AULD.
A study of the restoration of heathland on successional sites: changes in vegetation and soil chemical properties

784 N. A. D. BENDING & A. J. MOFFAT.
Tree performance on minespoils in the South Wales coalfield

798 W. J. PEACH, G. M. SIRIWARDENA & R. D. GREGORY.
Long-term changes in over-winter survival rates explain the decline of reed buntings *Emberiza schoeniclus* in Britain

812 L. PALMA, P. BEJA & M. RODRIGUES.
The use of sighting data to analyse Iberian lynx habitat and distribution

Advances in Applied Ecological Techniques

825 T. HÄRKÖNEN, K. C. HARDING & S. G. LUNNERYD.
Age- and sex-specific behaviour in harbour seals *Phoca vitulina* leads to biased estimates of vital population parameters

842 Book Reviews

Volume 36 Number 6 1999

Editorial

847 S. J. ORMEROD, M. W. PIENKOWSKI & A. R. WATKINSON.
Communicating the value of ecology

Standard Papers

856 D. E. CHAMBERLAIN, A. M. WILSON, S. J. BROWNE & J. A. VICKERY.
Effects of habitat type and management on the abundance of skylarks in the breeding season

871 M. E. FERNANDEZ-GIMENEZ & B. ALLEN-DIAZ.
Testing a non-equilibrium model of rangeland vegetation dynamics in Mongolia

886 P. D. HULME, R. J. PAKEMAN, L. TORVELL, J. M. FISHER & I. J. GORDON.
The effects of controlled sheep grazing on the dynamics of upland *Agrostis–Festuca* grassland

901 R. E. MAJOR, F. J. CHRISTIE, G. GOWING & T. J. IVISON.
Age structure and density of red-capped robin populations vary with habitat size and shape

909 A. C. GANGE, D. E. LINDSAY & L. S. ELLIS.
Can arbuscular mycorrhizal fungi be used to control the undesirable grass *Poa annua* on golf courses?

920 K. K. DONEGAN, R. J. SEIDLER, J. D. DOYLE, L. A. PORTEOUS, G. DIGIOVANNI, F. WIDMER & L. S. WATRUD.
A field study with genetically engineered alfalfa inoculated with recombinant *Sinorhizobium meliloti*: effects on the soil ecosystem

937 R. J. SARNO, W. R. CLARK, M. S. BANK, W. S. PREXL, M. J. BEHL, W. E. JOHNSON & W. L. FRANKLIN.
Juvenile guanaco survival: management and conservation implications

946 R. G. DAVIES, P. EGGLETON, L. DIBOG, J. H. LAWTON, D. E. BIGNELL, A. BRAUMAN, C. HARTMANN, L. NUNES, J. HOLT & C. ROULAND.
Successional response of a tropical forest termite assemblage to experimental habitat perturbation

963 A. LANDA, K. GUDVANGEN, J. W. SWENSON & E. RØSKAFT.
Factors associated with wolverine *Gulo gulo* predation on domestic sheep

974 N. MOORE, A. WHITEROW, P. KELLY, D. GARTHWAITE, J. BISHOP, S. LANGTON & C. CHEESEMAN.
Survey of badger *Meles meles* damage to agriculture in England and Wales

989 A. CHERRILL & C. MCCLEAN.
Between-observer variation in the application of a standard method of habitat mapping by environmental consultants in the UK

1009 K. S. SIEX & T. T. STRUHSAKER.
Colobus monkeys and coconuts: a study of perceived human-wildlife conflicts

1021 A. KORHOLA, J. WECKSTRÖM & M. NYMAN.
Predicting the long-term acidification trends in small subarctic lakes using diatoms

1035 R. J. FENSHAM & J. E. HOLMAN.
Temporal and spatial patterns in drought-related tree dieback in Australian savanna

1051 F. A. M. TUYTTENS, D. W. MACDONALD, R. DELAHAY, L. M. ROGERS, P. J. MALLINSON, C. A. DONELLY & C. NEWMAN.
Differences in trappability of European badgers *Meles meles* in three populations in England

1063 P. B. BANKS.
Predation by introduced foxes on native bush rats in Australia: do foxes take the doomed surplus?

1072 Book Reviews
1075 Editors' Announcement
1076 Editors' Note
1079 Index